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Nursing Math (Quick Study: Academic)

Quick Study Academic

Nursing MATH

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Complete essentials for the student or professional math topics, measurement conversions, dosage calculations, vital signs, body-related calculations, health care operating indicators, condition-specific calculations & calculating risk

BASICS

Positive & Negative Numbers

- The **positive numbers** are to the right of 0 on a number line, and get larger as you move further away from 0. They may be written with or without a sign. (Ex. 5 or +5)
- Negative numbers** are less than 0 on a number line, and get smaller as you move further away from 0. They may be written with or without a sign. (Ex. -5)

RULES FOR ADDITION

- The sum of two positive numbers is a positive number.
(Ex. $5 + 4 = 9$)
- The sum of two negative numbers is a negative number.
(Ex. $-2 + -4 = -6$)
- The sum of one positive number and one negative number may be positive or negative, depending on which is larger, just remember that adding a negative number is the same as adding a negative number.
(Ex. $5 + -2 = 3$, $-5 + 2 = -3$, $2 + -5 = -3$)

RULES FOR SUBTRACTION

- Take the subtraction as addition of the opposite, so, first change the subtraction sign to an addition sign, and write the opposite of the original number being subtracted and solve as usual.
(Ex. $5 - 8 = 5 + (-8) = (-5) - 8 = -3$)

RULES FOR MULTIPLICATION

- The product of two positive numbers is a positive number.
(Ex. $5 \times 3 = 15$)
- The product of two negative numbers is a positive number.
(Ex. $-5 \times -3 = 15$)
- The product of one positive number and one negative number is a negative number.
(Ex. $5 \times -3 = -15$)

RULES FOR DIVISION

- The quotient of two positive numbers is a positive number.
(Ex. $15 \div 3 = 5$)
- The quotient of two negative numbers is a positive number.
(Ex. $-15 \div -3 = 5$)
- The quotient of one positive number and one negative number is a negative number.
(Ex. $15 \div -3 = -5$)

DISTRIBUTIVE PROPERTY

- A rule used in mathematics states that $a(b + c) = ab + ac$ or that $a(b - c) = ab - ac$. In other words, the first number in the parentheses may be distributed to, or multiplied by, each of the numbers inside the parentheses.

Remember to use the rules for multiplying, negative, and positive numbers if negative numbers are included in the expression.
(Ex. $5(5 + 3) = 5(5) + 5(3) = 25 + 15 = 40$, $5(-3 + 2) = 5(-3) + 5(2) = -15 + 10 = -5$)

Fractions

- Fractions represent parts of a whole; they are another way of showing division.
- The top number is called the **numerator**, and the bottom number is called the **denominator**.
- Three types of fractions:
 - Proper fractions: The numerator is less than the denominator. $\frac{2}{4}$
 - Improper fractions: The numerator is greater than or equal to the denominator. $\frac{7}{3}$
 - Mixed fractions: Consist of a whole number and a fraction part. $1\frac{1}{2}$
- Equivalent fractions: Putting a fraction in a form so that the only common factor between the numerator and denominator is 1 (also called **reducing a fraction** or writing it in **reduced form**).
(Ex. $\frac{2}{4}$ is the numerator and denominator have a common factor of 2, so divide each by 2 to get it in reduced form. $\frac{1}{2}$, note that only common factor is 1, so it is in reduced form.)

NOTE: Fractions that have the same value as a decimal and that same fraction is known as an **equivalent fraction**.

FINDING THE LEAST COMMON DENOMINATOR (LCD)

Find the LCD of the fractions $\frac{1}{3}$ and $\frac{2}{5}$. The LCD is the smallest whole number that both 3 and 5 will divide evenly. This number is used for performing operations (especially addition) involving fractions.

(Ex. Cross the fractions $\frac{1}{3}$ and $\frac{2}{5}$, what is the LCD? In this case, it is 5 x 3, or 15. So, multiply each of the numerators and denominators by whatever is needed to make each denominator equal to 15.
 $\frac{1}{3} \times \frac{5}{5} = \frac{5}{15}$ and $\frac{2}{5} \times \frac{3}{3} = \frac{6}{15}$. The LCD is 15.)

ADDING FRACTIONS

- If the fractions have the same denominator:
 - Add the numerators, the denominator stays the same.
 - Write the fraction in reduced form, if necessary.

(Ex. $\frac{1}{2} + \frac{3}{2} = \frac{4}{2}$. Since the numerator and denominator are both divisible by 2, reduce the fraction. $\frac{2}{1}$)

If the fractions have **different denominators**:

- Find the LCD and write equivalent fractions for each fraction using the LCD.
- Subtract the numerators, the denominator stays the same.
- Write the fraction in reduced form, if necessary.

(Ex. $\frac{2}{3} + \frac{1}{2} = \frac{12}{12} + \frac{6}{12} = \frac{18}{12}$. So, rewrite equivalent fractions with a denominator of 12. $\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$ and $\frac{1}{2} \times \frac{6}{6} = \frac{6}{12}$. Then add the numerators. $\frac{8}{12} + \frac{6}{12} = \frac{14}{12}$. Then it can be reduced by setting an equal number. $\frac{14}{12} = \frac{7}{6}$)

SUBTRACTING FRACTIONS

- If the fractions have the same denominator:
 - Subtract the numerators, the denominator stays the same.
 - Write the fraction in reduced form, if necessary.

(Ex. $\frac{2}{3} - \frac{1}{2} = \frac{4}{6} - \frac{3}{6} = \frac{1}{6}$. Since the greatest common factor of the numerator and denominator is 1, the fraction is already in reduced form.)

If the fractions have **different denominators**:

- Find the LCD and write equivalent fractions for each fraction using the LCD.
- Subtract the numerators, the denominator stays the same.
- Write the fraction in reduced form, if necessary.

(Ex. $\frac{2}{3} - \frac{1}{2} = \frac{12}{12} - \frac{6}{12} = \frac{6}{12}$. So, rewrite equivalent fractions with a denominator of 12. $\frac{2}{3} \times \frac{4}{4} = \frac{8}{12}$ and $\frac{1}{2} \times \frac{6}{6} = \frac{6}{12}$. Then subtract the numerators. $\frac{8}{12} - \frac{6}{12} = \frac{2}{12}$. Then it can be reduced by the greatest common factor of the numerator and denominator is 2. The fraction is already in reduced form.)

MULTIPLYING FRACTIONS

- Write the fractions (use whole numbers or mixed numbers) in fraction form.
- Multiply the numerators, then multiply the denominators.
- Find the greatest common factor in fraction form. Then write the fraction in reduced form.

(Ex. $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$. First, write all numbers in fraction form. $\frac{1}{2} \times \frac{3}{4}$. Then multiply the numerators. $1 \times 3 = 3$. Then multiply the denominator. $2 \times 4 = 8$. Then reduce the fraction. $\frac{3}{8}$)

DIVIDING FRACTIONS

- Write the fractions (use whole numbers or mixed numbers) in fraction form.
- Write the reciprocal of the second fraction (reciprocals are found by inverting, or flipping, the fraction so that the numerator is on the bottom and the denominator is on the top).
- Multiply the numerators, then multiply the denominators.
- Write the result in fraction form, then write the fraction in reduced form.

(Ex. $\frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \times \frac{4}{3} = \frac{4}{6}$. The numbers are both in fraction form, so change the division sign to a multiplication sign, and write the reciprocal of the second fraction. $\frac{1}{2} \times \frac{4}{3}$, then multiply the numerator. $1 \times 4 = 4$; multiply the denominator. $2 \times 3 = 6$. Then write the result in fraction form. $\frac{4}{6}$, or as a mixed number, $\frac{2}{3}$)

CONVERTING FRACTIONS TO DECIMALS

- Write the fractions (use whole numbers or mixed numbers) in fraction form.
- Divide the numerator by the denominator, and add a zero to front of the decimal point, if necessary.

(Ex. $\frac{1}{2}$, or it is a mixed number, write it as fraction form. $\frac{1}{2}$. Then divide 1 by 2 to get 0.5. Since there is already a zero to the left of the decimal point, there is no need to write the zero in front of it.)

CONVERTING FRACTIONS TO PERCENTAGES

- Convert the fraction to a decimal (by simplest division).
- Multiply the decimal by 100.
- Add the percent sign (%)

(Ex. $\frac{1}{2}$, it is already in fraction form, so just divide 1 by 2 to get 0.50; then multiply by 100 and add the percent sign (%)

(Ex. $\frac{1}{2}$, it is already in fraction form, so just divide 1 by 2 to get 0.50; then multiply by 100 and add the percent sign (%)

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Synopsis

BarCharts' newest 3-panel guide takes the mystery out of the different forms of math that are crucial to the nursing field. Each page is jam-packed with mathematical equations and formulas, their definitions, and step-by-step instructions on how to perform each one; helpful charts and tables are also included. Nursing students/practitioners + this guide = great success!

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Customer Reviews

In addition to the must have Elsevier HESI Exam Review book, I bought QuickStudy as another tool guide. I like that the information is concise, which makes it short and sweet. The information you need to know for the mathematic section for the HESI exam is very basic. Students have been taught the necessary math material, as early in elementary school to the end of sophomore year in high school. Nice to have on hand, but it is not necessary to purchase. All of the information for the math section is covered in the Elsevier review book. I recommend this product. Perfect note format, which will come in handy.

much too small to read

They also come with 3 punch holes to allow it to be in a binder which is EXTREMELY helpful!

Sturdy and nicely laminated as well. Great info that is going to help a lot through nursing school.

It was useful briefly. I stuck it in front of one of my binders and referred back to it a few times when I was starting out. Good for beginners or someone that likes to have information laid out like this and easily accessible.

Love it

Helped with graduating from nursing school.

I bought many of these cards (in different subjects) from and they were a GREAT help in nursing school and now as a Nurse I find I refer to them all the time. Recommend highly!

Absolutely love this! It's a quick go to for medical math! Love! Love! Love!

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